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Family Economics and the Retention Intentions of Army Enlisted Personnel

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> The Army Family Research Program (AFRP) is a 5-year integrated research program that supports the Chief of Staff of the Army (CSA) White Paper 1983: The Army Family and The Army Family Action Plans (1984-1990) through the development of databases, models, program evaluation technologies, and policy options that assist the Army to retain quality soldiers, improve soldier and unit readiness, and increase family adaptation to Army life. The purpose of this research was to examine the links between economic factors, the nonpecuniary elements of military life, spouse satisfaction with the military, and the member's retention intentions. The data consisted of 4,073 observations from the Army sample who responded to the 1985 Department of Defense (DoD) Survey of Enlisted Personnel and Military Spouses. The results indicate that family economic factors including spouse employment, member wages, and receipt of food stamps are important in the determination of member retention intentions. Accompaniment status is another determinant. The wives' satisfaction with the military
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does not significantly influence members' retention when variables that affect spouse satisfaction and member retention intentions are controlled. Labor force outcomes and several Army policy variables are important in determining Army wives' level of satisfaction with military life. (

FAMILY ECONOMICS AND THE RETENTION INTENTIONS OF ARMY ENLISTED PERSONNEL

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FAMILY ECONOMICS AND THE RETENTION
INTENTIONS OF ARMY ENLISTED PERSONNEL

I.   Introduction and Background

Recognizing the importance of families in achieving its overall mission, the Army
has taken a lead role among the services in responding to family issues. One focus of
current Army program activities is the Army Family Research Program (AFRP), a long-
range program of integrated research activities that focuses on the role of family factors
in retention, readiness, and sense of community. The AFRP is designed to assist Army
personnel in designing future policies and programs that strengthen families, enhance
spouse employment opportunities, increase soldier and unit readiness, and improve the
retention of qualified personnel.

The purpose of this paper is to analyze the effects of family economic factors on the
retention decision and to guide the development of the conceptual model of retention
behavior in the AFRP. Previous research suggests that members enter and remain in the
military conditional on monetary compensation and amenities of military life compared to
the next best civilian alternative (see, for example, Gotz and McCall, 1980; Warner, 1981;
and Warner and Simon, 1979). In addition to examining the effects of pecuniary and
nonpecuniary elements of military life on retention, this paper contributes to the research
by developing a household decision framework with the family as the unit of analysis.
Also, departing from the previous literature, which has focused on family factors apart
from economic ones (see, for example, Bowen 1986), this paper incorporates family
factors and economic factors in a single model. The effects of family economic factors and
the effects of nonpecuniary elements of military life on retention intentions are examined.
The family economic factors include the member's wage, spouse employment status, and

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whether the family receives food stamps and the non-pecuniary elements of military life include location and family separation, and family attitudes toward the military.

Although this paper focuses on the retention intentions of Army personnel, what is ultimately important to the Army is not the intentions of personnel but actual retention behavior. Brunner (1971) examined the reliability of reenlistment intentions for forecasting actual reenlistments and found intentions to be closely and systematically related to behavior. In a later study, Chow and Polich (1980) compared the reenlistment and separation rates with intention statements of DoD officers and enlisted personnel and found a very close relationship between intentions and behavior. Recent research by Hiller (1982) has shown intentions to be a strong predictor for actual behavior and that retention intentions actually underpredict behavior. The retention behavior of Army personnel and the relationship between intentions and behavior will be analyzed in a subsequent paper.

A positive relationship between spouse employment and retention is suggested in the Army White Paper (1983) and subsequent Army Family Action Plans. Although spouse employment is thought to be an important factor in the member's commitment to Army life, military readiness, and the retention of officers and enlisted personnel, the link is not well established. Considerable evidence does indicate, however, that spouse opinion is a significant factor in the member's decision to reenlist (see Lund, 1978; Szoc, 1982; Bowen, 1986; and Pittman and Orthner, 1988). When the spouse is supportive of the member's remaining in the military, reenlistment is more likely than if the spouse is not supportive. In this study the determinants of spouse satisfaction with military life (i.e., spouse satisfaction is used as a proxy for spousal support) are examined under the hypothesis that spouse work outcomes influence spouse satisfaction with military life and spouse satisfaction influences the member's retention decision. Spouse work outcomes may influence the member's retention decision both directly and indirectly. The indirect effect is captured through spouse satisfaction, that is, the extent to which the employment

status of Army spouses affects the spouse's satisfaction with military life which, in turn, affects member retention intentions

Previous studies which have examined the role of spousal support in member retention intentions (see Bowen, 1986) have failed to account for factors which affect both spousal support and retention intentions. In this paper the determinants of spouse satisfaction are modelled explicitly and an instrument for spouse satisfaction is included in the member retention intention equation. The result is that, once the effects of other variables are controlled for (i.e., the variables that are determinants of spouse satisfaction), spouse satisfaction is no longer statistically significant in determining member retention intentions. This is in contrast to previous studies. However, when there is no control for these effects, i.e. when we do not account for factors which affect both spouse satisfaction and member retention intentions, spouse satisfaction is a statistically significant determinant of member retention intentions in the model which is in keeping with previous studies.

In the next section the conceptual model and approach for analyzing the retention decision are developed. The third section describes the specific data used for this analysis, i.e., the 1985 DoD Surveys, and and reports summary statistics. The regression results are presented in the fourth section. The final section summarizes the results and policy implications of the study.
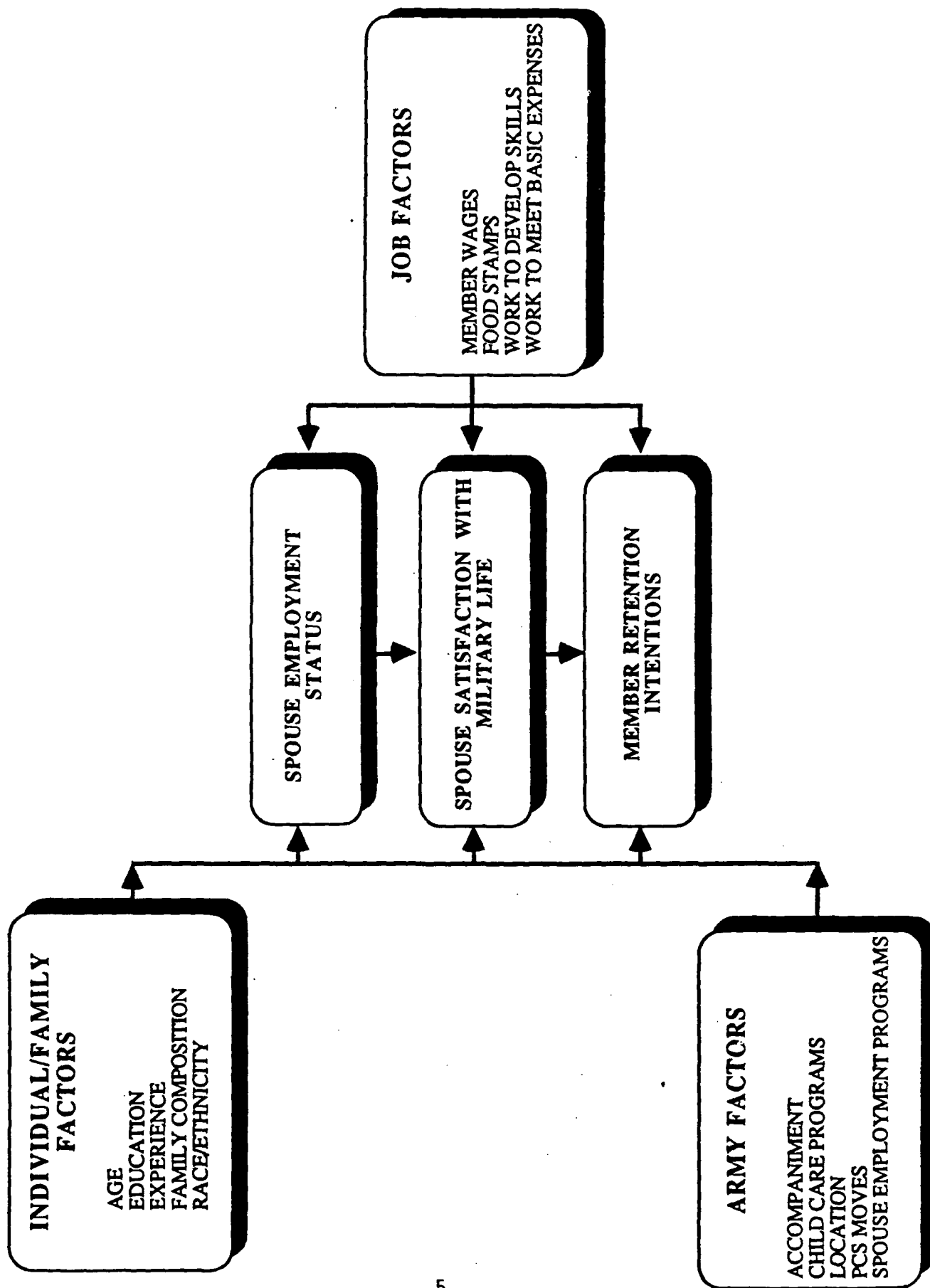
II. Conceptual Model and Approach

The economic theory of occupational choice states that individuals choose careers based on the utility derived from the pecuniary and non-pecuniary returns from each occupation. Military retention models have traditionally followed occupational choice theory and focus on the individual member's military/civilian career choice. According to this theory, members enter and remain in the military based on monetary compensation, working conditions, and amenities of military life compared to the next best civilian alternative. However, for families with two wage earners, spouse, as well as member, earnings and employment status influence the military/civilian career choice (Systems Research and Applications Corporation, 1988). Therefore, attention to the household as the decision-making unit is warranted.

Individual, family, and Army factors are hypothesized to affect spouse employment status which, in turn, is expected to affect spouse satisfaction with military life which, in turn, is expected to affect member retention intentions. The conceptual framework for the Family Factors and Retention Model (FFARM) is shown in Figure 1.

The empirical approach is to estimate a two equation model of spouse satisfaction with the military way of life and the retention intentions of enlisted Army personnel. However, in order to do this we first estimate a probit model of the spouse's probability of being unemployed as a function of variables related to the spouse's potential market and reservation wages and other socioeconomic and demographic variables (see Schwartz, et al 1987). The estimated parameters of the probit model are used to create an instrumental variable for the spouse's employment status by predicting the spouse's probability of being unemployed (see Appendix A). We can then examine the link between spouse employment status (i. e., the spouse's probability of being unemployed) and member retention intentions both directly and indirectly through spouse satisfaction. The spouse's employment status is hypothesized to influence the member's retention intentions to the

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FIGURE 1. FAMILY FACTORS AND RETENTION MODEL (FFARM)

INDIVIDUAL/FAMILY FACTORS

AGE
EDUCATION
EXPERIENCE
FAMILY COMPOSITION
RACE/ETHNICITY

ARMY FACTORS

ACCOMPANIMENT
CHILD CARE PROGRAMS
LOCATION
PCS MOVES
SPOUSE EMPLOYMENT PROGRAMS

SPOUSE EMPLOYMENT STATUS

SPOUSE SATISFACTION WITH MILITARY LIFE

MEMBER RETENTION INTENTIONS

JOB FACTORS

MEMBER WAGES
FOOD STAMPS
WORK TO DEVELOP SKILLS
WORK TO MEET BASIC EXPENSES

extent that employment opportunties are limited as a result of the member being in the military. If employers are geographically isolated in such a way that military wives are underemployed, unemployed or have fewer job opportunties than their civilian counterparts--then these limited employment opportunities may negatively influence member retention intentions. Under the indirect link, the spouse's inability to pursue satisfactory employment opportunities may negatively influence her satisfaction with the military which in turn influences the member's retention intentions.

Army Wive's Satisfaction with Military Life

In the spouse satisfaction equation, weighted ordinary least squares (OLS) is used to model spouse satisfaction with the military as a way of life as a function of family economic conditions, individual characteristics, military factors, spouse employment status and the related issues of child care availability, proximity to job opportunties, and relocation.

We expect wives' satisfaction with the military as a way of life to increase as member wages increase. In terms of spouse employment status, we expect unemployed spouses to be less satisfied with military life than either employed spouses or spouses who are not in the labor force because these wives may attribute their inability to find employment to their husbands' being in the military. Wives who work because they need the money for basic family expenses are expected to be less satisfied with the military as a way of life than those who work for other reasons or who do not work at all because wives who work only to meet basic expenses may attribute their need to work to their husbands' being in the military.

Age is expected to be positively associated with spouse satisfaction with military life. This effect may be somewhat biased because older women may be in households that have made decisions for a military career. In this sense age acts as a control variable. Holding a high school degree is expected to decrease satisfaction to the extent that spouses

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with at least a high school degree are more aware of opportunities outside of the military than those without a degree and perceive these civilian opportunties to be better than the military one.

We also examine the effects of exogenous Army policy factors on spouse satisfaction. Location in the continental U.S. (CONUS) versus outside the U.S., the presence of child care services on post, and an increase in the number of years spent on a post are all expected to increase spouse satisfaction with the military as a way of life.

One of the most consistent findings in the literature regarding the family-retention relationship is that when the spouse is supportive of the member's remaining in the military, reenlistment is more likely than if the spouse is not supportive. Studies have also found that the spouse's attitude toward the member's staying or leaving is influenced to some extent by the member's attitudes about staying or leaving (Lund, 1978; Szoc, 1982). Thus, whether the spouse is supportive of the member's reenlistment or the spouse's attitude toward the member's reenlistment may depend on whether the soldier is positive about reenlisting.

Since many of the factors which are determinants of the retention decision are also hypothesized determinants of the spouse's satisfaction with the military as a way of life we use an instrumental variable to estimate the effects of spouse satisfaction on member retention intentions. For example, as stated above, member satisfaction with the military may influence both spouse satisfaction and member retention intentions. However, since this variable is not included in the model, its effects are captured by the error term in each equation. In order to control for this type of influence, i. e., to control for variables which are not in the model but which may effect both spouse satisfaction and member retention intentions, and the resulting correlation between the error terms, an instrumental variable for spouse satisfaction is used in the member retention intention equation.

Retention Intentions

In the second equation the retention intentions of enlisted members are modeled as a function of member wages, spouse employment status, whether or not the family receives food stamps, individual characteristics, military factors and the predicted spouse's satisfaction with the military as a way of life using weighted ordinary least squares (OLS).

We expect wages to have a positive impact on retention intentions and spouse unemployment to have a negative effect on retention intentions. In addition, we expect members whose households receive food stamps to be less likely to reenlist than those who do not because, for these households, military wages are not adequate to meet basic expenses.

The number of children is expected to increase retention intentions because households with children receive more benefits from the Army (e.g. better housing, medical and health benefits for children) than those without. The member's years of education is expected to have a negative effect on reenlistment because education increases the availability of comparable or better job opportunities in the civilian sector.

We also examine the effects of exogenous Army policy factors on retention intentions. Location in the continental U.S. (CONUS) versus outside the continental U.S. (OCONUS), whether or not the spouse accompanies the member, and the number of months at the present location are non-pecuniary factors thought to influence retention intentions. We expect a positive relationship between whether or not the spouse accompanies the member and member retention intentions and a positive relationship between the number of months at the present location and member retention intentions because a permanent change of station often requires a period of adjustment for both the member and the spouse and possibly an interruption in the spouse's career or children's schooling.

Finally we examine the effect of spouse satisfaction with the military as a way of life on retention intentions. As noted previously, spouse satisfaction serves as a proxy for spouse support. Based on previous research (Szoc, 1982; Bowen 1986; Pittman and Orthner, 1988) we expect a positive relationship between spouse support and retention intentions. To the extent that the spouse receives a benefit through exposure to her husbands' work environment, her willingness to support his career commitments will increase directly as a function of her satisfaction with the military as a way of life. Therefore, as the spouse's satisfaction with the military increases we expect an increase in member retention intentions.

III. Data and Descriptive Statistics

The 1985 DoD Surveys

Army data from the 1985 DoD Surveys of Officer and Enlisted Personnel and Military Spouses were used for this analysis.[1] Together these surveys produced two primary data files: a member file, which includes officers and enlisted personnel, and a spouse file, which includes spouses only. The data set for the present analysis consists of female, nonmilitary spouses of enlisted Army personnel from the 1985 DoD spouse file and enlisted Army personnel from the 1985 DoD member file. The data set for the analysis will be referred to as the Army Family file. The Army Family file has 4073 observations and includes only male enlisted personnel with nonmilitary wives.

The population from which the 1985 DoD Member Survey was sampled consists of active-duty officers and enlisted personnel who were stationed in the United States or overseas on 30 September 1984.

The sample for the 1985 DoD Spouse Survey was derived from the sample for the 1985 DoD Member Survey. The Spouse Survey was an attempt to census spouses of married military members who were selected for inclusion in the Member Survey.

The sample selected for the 1985 DoD Member Survey consisted of 34,601 Army enlisted personnel; of these 32,513 were eligible--that is they were not separated from the military at the time the questionnaire was distributed--and 19,220 returned usable questionnaires. Of the usable questionnaires, 12,360 were from males. Data collection for the Member Survey began in January 1985 and ended in June 1985. The sample selected for the 1985 DoD Spouse Survey consisted of 15,429 wives of enlisted Army personnel; of these 13,775 were eligible and 6677 returned usable questionnaires.

Because the sampling plan allowed for disproportionate sampling among subgroups in the DoD population and because sampled subgroups did not respond to the survey at

identical rates, differential weights were computed for the subgroups. When the sample of respondents is weighted, population statistics can be computed for the population at a given point in time. The population to which the survey data are assumed to apply is the DoD population with 10 or more months of service as of 31 March 1985.

Variable Definitions and Descriptive Statistics

The variables used in this analysis are taken from the Army Family file briefly described above. Table 1 provides a complete listing of all variables and definitions. The dependent variable for spouse satisfaction is an index number ranging from 1 (very dissatisfied) to 7 (very satisfied) taken from the spouse's response to the question:

Now, taking all things together, how satisfied are you as a spouse with the military as a way of life? (1=very dissatisfied; 7=very satisfied)

The dependent variable for retention intentions is an index number ranging from 0 (no intention to reenlist) to 10 (certain to reenlist) taken from the member's response to the question:

How likely are you to reenlist at the end of your current term of service? (0=no chance; 10=certain)

Note that the race/ethnicity variables (i.e., Black, Hispanic, Other, and White) are equation specific. In the spouse satisfaction equation they refer to the race/ethnicity of the spouse and in the member retention intention equation they refer to the race/ethnicity of the member.

Sample means of retention intentions by selected model variables are given in Table 2. Means, standard deviations, and the range for all of the spouse satisfaction model variables are presented in Table 3. Means, standard deviations, and the range for all of the retention intention model variables are presented in Table 4.

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Table 1   FFARM Variable Definitions

Variable   Definition

Dependent Variables

Retention Intent   Member's likelihood of reenlisting at end of current term of
                                 service (0 is no chance and 10 is certain).

Satisfaction   Index of wife's satisfaction with the military as a way of life
                                 (1 is very dissatisfied and 7 is very satisfied).

Independent Variables

Unemployed   Predicted probability of spouse being unemployed.

Education   Number of years of schooling completed by member.

Spouse Education   Number of years of schooling completed by spouse.

Hsgrad   Spouse is a high school graduate, dummy variable (1=yes;
                                 0=no).

Black   Member/Spouse is black, dummy variable   (1=yes; 0=no).*

Hispanic   Member/Spouse is hispanic or spanish, dummy variable
                                 (1=yes; 0=no).*

Other   Member/Spouse is neither black, hispanic nor white, dummy
                                 variable (1=yes; 0=no).*

White   Member/Spouse is white, dummy variable (1=yes; 0=no).*
                                 (Omitted category).

Table 1   FFARM Variable Definitions

Variable	Definition

CONUS	Member's present geographic location is in the continental U.S, dummy variable (1=yes; 0=no).
Husband's Wages	Member's annual taxable military income, in thousands.
Accompany	Member is currently at same post or geographic location as spouse, dummy variable (1=yes; 0=no).
Food Stamps	Household received government food stamps during 1984, dummy variable (1=yes; 0=no).
Years per place	Average number of years per post for a household.
Months present	Member's number of months at present location.
Months at location	Spouse's number of months at present location.
CCON	Child care services available on post, dummy variable (1=yes; 0=no).
Spouse Employ. Program	Spouse employment program on post, dummy variable (1=yes; 0 = no).
Distance	Spouse rating of satisfaction with distance to population centers, 1 is very poor and 5 is excellent.
Children	Number of children (0 = no children; 1 = 1 child; 2 = 2 children; 3 = 3 children; 4 = 4 or more children).

Table 1   FFARM Variable Definitions

Variable   Definition

Youngest Child Age 0 - 5   Youngest child at location age 0 - 5, dummy variable.

Youngest Child Age 6 - 11   Youngest child at location age 6 - 11, dummy variable.

Youngest Child Age 12 - 17   Youngest child at location age 12 - 17, dummy variable.

Youngest Child Age 18+   Youngest child at location age 18 or older and spouse is age

                                 30 or older, dummy variable.

No Child Dependents   No child dependents at location and spouse is age 29 or

                                 younger, dummy variable. (Omitted category).

Work Develop   Spouse is working to develop a career.

Work Need   Spouse is working only to meet basic family expenses.

* The racial/ethnic variables are equation dependent. In the spouse employment status and
satisfaction equations this variable represents the spouse. In the member retention intention
equation this variable represents the member.

The statistics presented in Table 2 show mean retention intentions of husbands with employed spouses to be highest (about 7.98) and mean retention intentions of husbands with unemployed spouses to be lowest (about 7.62). Likewise, the retention intentions of husbands whose spouses are very satisfied with military life are highest (8.52) and the retention intentions of husbands whose spouses are dissatisfied with military life are lowest (6.94) when compared to all other levels of spouse satisfaction with military life.

In addition, husbands accompanied by their spouses have higher retention intentions, on average, than those unaccompanied. On average, husbands in the sample stationed in CONUS haver higher retention intentions (7.95) than those stationed OCONUS (7.71).

The statistics presented in Table 3 show that the spouses in our sample are, on average, 30 years old. About 19% of the spouses in the sample are black, 9% hispanic, 60% white, and 12% of other racial/ethnic backgrounds. Nearly 87% of the spouses in the sample have high school degrees.

The average probability of being unemployed is .12 for the spouses in the sample.[2] The average probability of being either employed or not in the labor force (the excluded category in the model) is therefore .88. This category can be broken down into the average probability of being employed (.43) and the average probability of not being in the labor force (about .45). Of all the spouses in the sample, 22% are working to develop a career and 4% are working only to meet basic family expenses. This variable is computed from the following question:

> *How much did each of the following contribute to your decision to work? (major contribution; moderate contribution; minor contribution; no contribution)*
>
> *a. need the money for basic family expenses*
> *b. always planned to work/have a career*
> *c. wanted extra money to use now*
> *d. saving income for the future*
> *e. independence/self-esteem*
> *f. just enjoy working*
> *g. to gain experience for a future career*

Table 2

Mean Retention Intentions of Enlisted Army Personnel
by Selected Spouse/Household Characteristics

Characteristic	Mean Retention Intentions*
Employment Status of Spouses:	
Unemployed Spouse	7.6176
Employed Spouse	7.9834
Spouse Not in Labor Force	7.7457
Spouse Satisfaction with Military Life:	
Very Satisfied	8.5243
Satisfied	8.2727
Somewhat Satisfied	7.9928
Neither Satisfied nor Dissatisfied	7.2969
Somewhat Dissatisfied	7.3801
Dissatisfied	6.9469
Very Dissatisfied	7.3906
Accompaniment Status:	
Accompanied by Spouse	7.8698
Unaccompanied by Spouse	7.5784
Geographic Location:	
CONUS	7.9512
OCONUS	7.7067
All	7.8229

* Weighted Means

Table 3

Summary Statistics: Spouse Satisfaction with Military Life

Variable	Mean	Standard Deviation	Minimum Value	Maximum Value
Unemployed	0.1237	0.0550	0.0031	0.3413
CONUS	0.6099	0.4878	0.0000	1.0000
Husband's Wages (000s)	14.9114	3.9835	3.7460	51.9880
Black	0.1883	0.3910	0.0000	1.0000
Hispanic	0.0872	0.2822	0.0000	1.0000
Other	0.1208	0.3259	0.0000	1.0000
Years per Place	1.9370	1.4499	0.1429	21.0000
Child Care Program on Post	0.7203	0.4489	0.0000	1.0000
Age	30.1801	6.6310	14.0000	63.0000
High School Graduate	0.8684	0.3381	0.0000	1.0000
Children	1.6313	1.1241	0.0000	4.0000
Distance	3.6797	0.9902	1.0000	5.0000
Work Develop	0.2253	0.4178	0.0000	1.0000
Work Need	0.0403	0.1966	0.0000	1.0000
Satisfaction	4.5990	1.5883	1.0000	7.0000

If a spouse answered 'a' was a major contribution and all of the other reasons where either minor or no contribution then this spouse was defined as working only to meet basic family expenses. If a spouse answered b, e, f, or g was a major contribution then this spouse was defined as working to develop a career.

The mean level of spouse satisfaction with military life is 4.6 which indicates that, on average, Army wives are somewhat satisfied (4 indicates neither satisfied nor disssatisfied and 5 indicates somewhat satisfied).

About 72% of spouses in the sample have access to child care programs on post, about 61% are stationed in CONUS and, on average, these spouses spend about 2 years at each post.

The statistics presented in Table 4 indicate that the enlisted members in our sample have, on average, 13 years of education. 23% of the members in the sample are black, 9% are hispanic, 63% are white and 5% are in another racial/ethnic group.

On average, the enlisted members in our sample earn about $14,900 dollars per year and about 2% receive food stamps. About 61% of the members are stationed in CONUS and 93% are accompanied by their spouses. On average, members have been at their present location about 23 months.

Table 4

Summary Statistics: Member Retention Intentions

Variable	Mean	Standard Deviation	Minimum Value	Maximum Value
Satisfaction	4.5944	0.3547	3.2806	5.8740
Black	0.2315	0.4218	0.0000	1.0000
Hispanic	0.0905	0.2870	0.0000	1.0000
Other	0.0463	0.2102	0.0000	1.0000
Education	12.7652	1.2892	3.0000	20.0000
Husband's Wages (000s)	14.9114	3.9835	3.7460	51.9880
Children	1.6313	1.1241	0.0000	4.0000
Unemployed	0.1237	0.0550	0.0031	0.3413
Months Present	23.3916	16.8031	0.0000	120.0000
CONUS	0.6099	0.4878	0.0000	1.0000
Accompanied	0.9286	0.2575	0.0000	1.0000
Food Stamps	0.0170	0.1294	0.0000	1.0000
Retention Intent	7.9765	2.8366	0.0000	10.0000

IV. Empirical Results

A two equation model of spouse satisfaction with the military as a way of life and the retention intentions of enlisted Army personnel is estimated. However, in order to do this we first create an instrumental variable for the spouse's probability of being unemployed. Because being unemployed is known to be related to many of the same variables that affect spouse satisfaction with military life and member retention intentions, an instrumental variable is first constructed in order to control for the indirect effects of the variables that may operate through the spouse unemployed variable. The results of this probit estimation--used to create the instrumental variable for the probability of the spouse's being unemployed--are included in Appendix A, Table A-1. This estimation is performed using the entire sample of women so that the status of being unemployed is compared to being either employed or not in the labor force. The fitted value for this estimation, interpreted as the probability of the spouse's being unemployed, is included as an independent variable in the spouse satisfaction and member retention intentions equations.

Army Wives' Satisfaction with Military Life

The results of the OLS estimation for Army wives' satisfaction with military life, including coefficient estimates, t statistics, and the adjusted R square, are presented in Table 5.

The results suggest that family economic varibles as well as several Army policy variables (e.g., child care programs and location) are important determinants of Army spouse satisfaction with the military as a way of life. The probability of the spouse's being unemployed is found to be a statistically significant and negative determinant of spouse satisfaction. That is, compared to wives who are either employed or not in the labor force, unemployed wives are less satisfied with the military as a way of life. One explanation for

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Table 5: Spouse Satisfaction with Military Life
OLS Estimation Results (t-statistics)

Independent Variable	Satisfaction Index
Intercept	3.2634 *** (14.149)
Unemployed	-1.4821 ** (-2.186)
CONUS	0.1075 * (1.886)
Husband's Wages	0.0400 *** (4.169)
Black	0.2902 *** (3.197)
Hispanic	0.1703 * (1.691)
Other	-0.1959 ** (-2.084)
Years per Place	-0.0128 (-0.503)
Child Care Program on Post	0.1719 *** (2.740)
Age	0.0147 ** (2.474)
High School Graduate	-0.1784 ** (-2.085)
Children	0.0234 (0.895)
Distance	0.1042 *** (3.550)
Work Develop	0.0989 (1.445)
Work Need	-0.6016 *** (-4.253)

*** t-statistic significant at .01 level
** t-statistic significant at .05 level
* t-statistic significant at .10 level

F Value:	12.999
Prob > F:	0.0001
Adjusted R-Square:	0.0479
Number of Observations	3341

this may be that women who are unemployed attribute part of their inability to find a job to their husbands' being in the military.

The husband's wage is a statistically significant and positive determinant of spouse satisfaction. The computed elasticity of spouse satisfaction with respect to member wages is about 0.13[4] which suggests that the direct effect of an increase in the husbands wage by 1% will increase spouse satisfaction by .13%. It is important to note that years of service, rank and wages are highly correlated so it is not possible to include all of these variables in the model. Wages may be picking up the effects of these omitted variables and part of the effect of wages on spouse satisfaction may be due to a selection bias in the data.

Access to child care on post is statistically significant and positive in determining spouse satisfaction suggesting that locating child care centers on post will increase spouse satisfaction. The number of children was thought to have a positive effect on spouse satisfaction with the military because the number of benefits that a family receives from the military increase with family size. However, this variable was found to be insignificant in determining spouse satisfaction.

Location in CONUS is also a statistically significant and positive determinant of spouse satisfaction. This indicates that spouses located in the continental U.S. are more satisfied with military life than those located outside the U.S. The average number of years per post is not a significant determinant of spouse satisfaction.

Spouse satisfaction with the location of the household with respect to the distance to population centers is statistically significant and positive in determining satisfaction with military life. This indicates that spouses who are satisfied with their proximity to population centers are more satisfied with military life.

Wives who are working only to meet basic family expenses (i.e., Work Need) are less satisfied with the military as a way of life than wives who are working for other reasons (i.e., Work Develop) or not working at all. This result suggests that Army wives who feel that they have to work in order to meet basic family expenses and work for no

other reason may attribute part of the reason for their having to work to the fact that their husband's military salary is too low to cover basic expenses. These Army wives may be dissatisfied with their husband's military pay and, as a result of this, dissatisfied with military life in general. Working to develop a career was not a statistically significant factor in determining spouse satisfaction with military life.

Demographic characteristics of Army wives were also found to be related to satisfaction with military life. Age is a statistically significant and positive factor in the determination of spouse satisfaction which suggests that older wives are more satisfied. However, this result may reflect a selection bias because older women represent households that have been in the military longer and that may have chosen the military as a career. High school graduates are less satisfied with the military than non-high school graduates. This may indicate that spouses without high school degrees view the military as a stable family employment opportunity whereas those with high school degrees feel that there are better opportunities outside of the military. In general, spouses of black or hispanic origin are more satisfied with the military as a way of life than whites. This may indicate that minorities have fewer attractive civilian alternatives.

Retention Intentions

The results of the OLS estimation for the member's retention intentions including coefficient estimates, t statistics, and the adjusted R square are presented in Table 6. The results of the retention intention model using an instrument for spouse satisfaction are presented in the first column. For comparison purposes, the estimation results using actual spouse satisfation are presented in the second column.

Several family economic variables and Army policy variables are important in determining member retention intentions (column 1 of Table 6). Member wages are statistically significant and positive indicating that higher wages will increase retention intentions. The elasticity of retention intentions with respect to member wages indicates

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Table 6

Retention Intentions: Spouse Satisfaction Instrument vs. Actual
OLS Estimation Results (t-statistics)

Independent Variable	Retention Intention	Retention Intention
Intercept	7.0251 *** (5.408)	6.8047* (9.162)
Spouse Satisfaction Instrument	0.1700 (0.620)	--
Spouse Satisfaction Actual	--	0.2640*** (6.808)
Black	0.3553 * (1.846)	0.3683** (2.125)
Hispanic	-0.1801 (-0.868)	-0.1341 (-0.677)
Other	-0.1990 (-0.645)	-0.2685 (-0.887)
Education	-0.1065 ** (-2.132)	-0.1128** (-2.318)
Husband's Wages	0.0699 *** (2.999)	0.0781*** (4.327)
Children	0.0754 (1.283)	0.0725 (1.303)
Unemployed	-2.6910 * (-1.653)	-2.5401* (-1.725)
Months Present	0.0037 (0.796)	0.0043 (0.967)
CONUS	0.0923 (0.726)	0.0526 (0.435)
Accompanied	0.5969 ** (2.067)	0.2806 (1.041)
Food Stamps	-1.2883 *** (-2.813)	-1.0894** (-2.417)

*** t-statistic significant at .01 level
** t-statistic significant at .05 level
* t-statistic significant at .10 level

F Value:	5.848	10.369
Prob > F:	0.0001	0.0001
Adjusted R-Square:	0.0262	0.0468
Number of Observations	2164	2291

that the direct effect of a 1% increase in annual wages (about $149) will lead to an increase of 0.13% in member retention intentions. Again, as in the spouse satisfaction equation, the positive effect of wages on retention intentions may be partially attributable to a selection bias in the data. The probability of the spouse being unemployed is a statistically significant and negative factor in member retention intentions. This result shows that as the probability of the spouse being unemployed increases, member retention intentions decline. One explanation for this is that the member may attribute part of his wife's inability to find a job to the military in general and may think that the household might be better off outside of the military. Also, members who receive food stamps are less likely to reenlist than those who do not. A plausible explanation for this is that members who receive food stamps attribute their need for food stamps to the military.

In addition to economic variables, several other Army policy variables are important determinants of retention intentions. Whether or not the member is accompanied by his wife is a statistically significant and positive factor in the determination of retention intentions. This shows that accompanied members are more likely to reenlist that those unaccompanied. Although location in CONUS vs. OCONUS is important for spouse satisfaction, it is not found to be a statistically significant factor in member retention intentions.

The education level of members is also important in the determination of retention intentions. The results show that an increase in education will lead to a decrease in retention intentions. Racial/ethnic characteristics of members and the number of children are not statistically significant in determining retention intentions.

It is important to note here that many of the above variables, that is, member wages, the spouse's probability of being unemployed, and accompaniment status, are policy variables which the Army can change through its policies and programs. The simulated impact of changes in these variables on member retention intentions is discussed in the next section.

The results in the first column of Table 6 show that spouse satisfaction with the military as a way of life is not a statistically significant factor in the determination of member retention intentions. One possible explanation for this is the following. In our model of retention intentions we use an instrument (i.e., a predicted value) for spouse satisfaction with the military as a way of life because of the correlation between the error terms in the spouse satisfaction and member retention intention equations. In addition, inclusion of an instrument for spouse satisfaction allows us to separate the direct from the indirect effects of the factors which affect both spouse satisfaction and member retention intentions. Once we control for these effects, spouse satisfaction does not significantly influence member retention intentions. This result is in contrast to previous research which shows spouse support (satisfaction is a proxy for support in this study) to be a major determinant of member retention intentions (see, for example, Szoc, 1982; Bowen, 1986). In previous research which examined the relationship between spouse support and member retention intentions, the spouse support variable may have been significant because it was picking up the effects of variables that were excluded from the model being estimated and no control for these effects was included in the model. In this paper we model the determinants of spouse satisfaction explicitly and by including an instrument in the retention intention equation we control for the effects of these other variables. The result is that spouse satisfaction is no longer statistically significant in determining retention intentions. One explanation for this is that the instrument for spouse satisfaction may not be a good one. The correlation between the actual level of spouse satisfaction and the predicted level is low (.22) but significant at 1 percent. However, despite the low correlation this is the best available instrument at the current time.

Another reason why our results may differ from previous research may be that spouse satisfaction is not a good proxy for spouse support or it is only one facet of a more complex spouse support variable. However, when we include the actual level of spouse satisfaction rather than the predicted value in the member retention intentions equation,

spouse satisfaction is statistically significant and positively related to member retention intentions (see Table 6 column two). Therefore, we think it is a reasonable proxy for spouse support.

A final explanation and the one that we are most comfortable with is that the relationship between spouse satisfaction and member retention intentions may be indirect and that spouse satisfaction may effect member retention intentions through member satisfaction with the military. However the interaction between member and spouse satisfaction has not been included in this model and is an empirical question for further research.

Simulations

In this section we simulate the impact of changes in significant family economic and Army policy variables on member retention intentions. Simulation results for member retention intentions are shown in Table 7. We examine the effect of the spouse being unemployed (i.e. Unemployed), the member being accompanied by the spouse (i.e., Accompanied), and an increase in member wages by $1000 (i.e., Husband's wages). Both changes in the base retention intention index and the percentage change in the base are shown in Table 7.

From the simulation results we see that if each member in the sample had a value for each independent variable set at its sample mean then the base level of retention intentions would be 8.04 which indicates that the probability of reenlistment for enlisted members is very high.[5]

The simulation results show that the effect of the spouse being unemployed will be a 35% decrease in retention intentions. This result suggests that member retention intentions are very responsive (i.e., elastic) to changes in spouse unemployment status. Therefore programs aimed at decreasing unemployment of military wives may be useful in increasing member retention intentions.

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Table 7

Simulation Results: Member Retention Intentions

	Retention Intentions	Percent Change
Base Retention Intent	8.0422	---
Simulated Changes:		
Unemployed	-2.9429	-35.13%
Husband's Wages	0.0831	1.03%
Accompanied	0.5970	7.97%

The model also predicts that a change from being unaccompanied to accompanied by the spouse will result in a 7.97% increase in member retention intentions. Member retention intentions will increase by about 1% for an increase of $1000 in member wages indicating that retention intentions are not very responsive to wage changes.

V.   Summary and Policy Implications

This paper has examined the links between family economic factors, nonpecuniary elements of military life, spouse satisfaction with the military, and the member's retention intentions. Spouse employment status is hypothesized to influence the member's retention intentions both directly and indirectly through spouse satisfation with the military way of life. The results indicate that (1) family economic factors, including spouse employment status, member wages, and whether the family receives food stamps, are important in the determination of member retention intentions; (2) accompaniment status is an important determinant of member retention intentions; (3) wives' satisfaction with the military does not significantly influence member's retention intentions when we control for variables that affect both spouse satisfaction and member retention intentions; and (4) labor force outcomes as well as several Army policy variables are important in determining Army wives' level of satisfaction with military life.

The spouse satisfaction model results suggest that spouse attitudes are very responsive to changes in unemployment status. A spouse employment program specifically aimed at increasing employment opportunities for Army wives would be expected to significantly increase Army wives' overall satisfaction with the military. The results also indicate that child care services on post appear to have a positive effect on overall spouse attitudes toward the military. The effect of an increase in the husband's wages is positive, but spouse satisfaction is relatively insensitive to this factor. Finally, a change in location from OCONUS to CONUS would result in an increase in overall spouse satisfaction, but the effect is small.

The retention intentions model results show that member wages have a positive impact on retention intentions, the probability of the spouse's being unemployed has a negative and significant effect on member retention intentions, and receiving food stamps has a negative effect on member retention intentions. The results also indicate that being

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an accompanied member (i. e., member accompanied by spouse) has a positive effect on retention intentions. Finally, once we control for factors that affect both retention intentions and spouse satisfaction with the military as a way of life, there is no direct effect of spouse satisfaction on member retention intentions.

Further Research

In this paper the relationship between family economic factors and member retention intentions has been examined. However, in specifying and estimating the model to analyze this relationship, the direct effect of spouse satisfaction on retention intentions was also examined. Although the results show no statistically significant relationship between spouse satisfaction and member retention intentions once we control for factors that effect both outcomes, whether or not there is an indirect effect of spouse satisfaction on retention intentions, possibly through member satisfaction with the military, is an empirical question. An important unanswered question is the relationship between spouse satisfaction, member satisfaction and member retention intentions and behavior.

Finally, although previous research has shown retention intentions to be a good proxy for actual behavior (see Chow and Polich, 1980; Hiller, 1982), what is ultimately important to the Army is actual behavior. Another important research area is the link between retention intentions and actual behavior.

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Endnotes

1. See Griffith, et al (1986) and McCalla, et al (1986) for a complete description of the DoD survey design plus more detailed information about the sample, data collection, response rates, and the questionnaires.

2. Note that the unemployment variable is an instrument created in two steps. First, a reduced form labor supply model of spouse unemployment is estimated as a probit equation. Second, the estimated coefficients are used to predict the spouse's probability of being unemployed. Hence the unemployment variable represents the probability of being unemployed. Complete estimation results are included in Appendix A.

3. Note that the spouse satisfaction variable is an instrument or a predicted value created by estimating the spouse satisfaction equation and then predicting a value for spouse satisfaction. This variable represents the predicted level of spouse satisfaction with the military as a way of life. The means of actual and predicted spouse satisfaction are arithmetically the same; they are not exactly the same due to rounding error.

4. The elasticity of spouse satisfaction (Satisfaction) with respect to member wages (Husband's Wages) is computed at the mean as follows:

$$(\partial \text{Satisfaction} \; / \; \partial \text{Husband's Wages}) * (\text{Husband's Wages}/\text{Satisfaction}).$$

The first term represents the coefficient estimate from the spouse satisfaction model and the second term represents the ratio of the mean values for wages and spouse satisfaction.

5. This value differs somewhat from the mean level of retention intentions in Table 2 (i.e., 7.8) because the value of retention intentions is computed with all other variables set at the sample mean in the simulation.

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APPENDIX A

UNEMPLOYED INSTRUMENTAL VARIABLES: PROBIT ESTIMATION

RESULTS (t-STATISTICS)

Table A-1

Unemployed Instrumental Variable:
Probit Estimation Results (t-statistics)

Independent Variable	Unemployment Index
Intercept	-0.9457 *** (-3.667)
Spouse Education	0.0336 ** (2.230)
CONUS	0.0611 (1.071)
Husband's Wages	-0.0113 (-1.159)
Age	-0.0065 (-0.979)
Black	0.2609 *** (3.714)
Hispanic	0.0910 (0.935)
Other	0.0442 (0.489)
Spouse Employment Program	0.1461 *** (2.575)
Youngest Child Age 0-5	-0.0238 (-0.317)
Youngest Child Age 6-11	0.1248 (1.331)
Youngest Child Age 12-17	0.0644 (0.493)
Youngest Child Age 18+	0.1832 (1.392)
Distance	-0.0593 ** (-2.163)
Months at Location	-0.0126 *** (-7.219)

*** t-statistic significant at .01 level
 ** t-statistic significant at .05 level
  * t-statistic significant at .10 level

Observations:

U1 = 0:   3212
U1 = 1:   453

TOTAL: 3665

(-2.0) Times Log Likelihood Ratio: 110.0845
Degrees of Freedom: 14